**CIS 3715 Spring 2019: Quiz 3**  STUDENT NAME: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. (2 points) Name three ways in which you can visualize more than 2 numerical attributes at the same time

2. (2 points) What is one similarity and one difference between a histogram and a tabulation?

3. (1 point) Show an example of a scatterplot of two attributes whose correlation coefficient is 0.9

4. (5 points) You are given the following data set saved as pandas object df. Try to guess what is the output of

|  |  |  |
| --- | --- | --- |
| Origin | Year | Size |
| USA | 2016 | 1.5 |
| Europe | 2017 | 1.0 |
| Europe | 2016 | 2.5 |
| Japan | 2017 | 4.0 |
| USA | 2017 | 2.5 |
| USA | 2016 | 3.0 |

1. df[‘Year’].value\_counts()
2. plt.scatter(df['Year'],df['Size']);

c) np.corrcoef(df[['Year','Size']].T)

d) pd.crosstab(df['Origin'],df['Year'])

e) df.pivot\_table(values=["Size"], index=["Origin"])